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Spatial structure of heptapeptide Aβ16-22 (beta-amyloid Aβ1-40 active fragment) in solution and in complex with a biological membrane model

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Abstract

The spatial structure of an active fragment of beta-amyloid Aβ1-40 heptapeptide Aβ16-22 (Lys-Leu-Val-Phe- Phe-Ala-Glu) in aqueous buffer solution and in complex with sodium dodecyl sulfate micelles as a model membrane system was investigated by 1H NMR spectroscopy and two-dimensional NMR (TOCSY, HSQC-HECADE (Heteronuclear Couplings from ASSCI-domain experiments with E.COSY-type crosspeaks), NOESY) spectroscopy. Complex formation was confirmed by the chemical shift changes of the heptapeptide's 1H NMR spectra, as well as by the signs and values of the NOE effects in different environments. We compared the spatial structure of the heptapeptide in borate buffer solution and in complex with a model of the cell surface membrane. Copyright © 2012 John Wiley & Sons, Ltd.

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Keywords

1H NMR, beta-amyloid, micelle, NMR, oligopeptides, two-dimensional NMR (TOCSY, HSQC-HECADE, NOESY) spectroscopy